



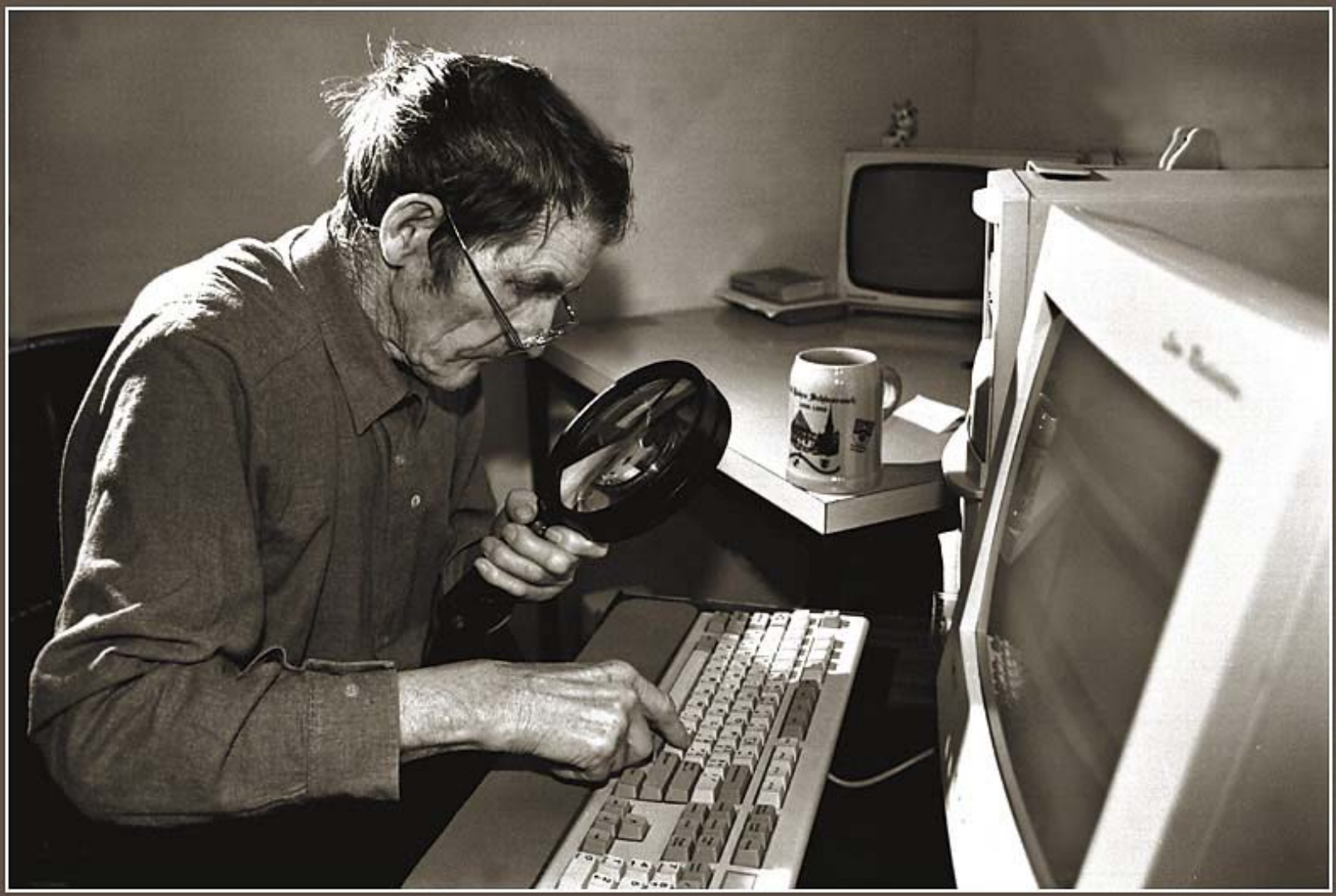
DEVELOPMENT AND DEPLOYMENT OF A HEALTH INFORMATION SYSTEM IN CROATIA

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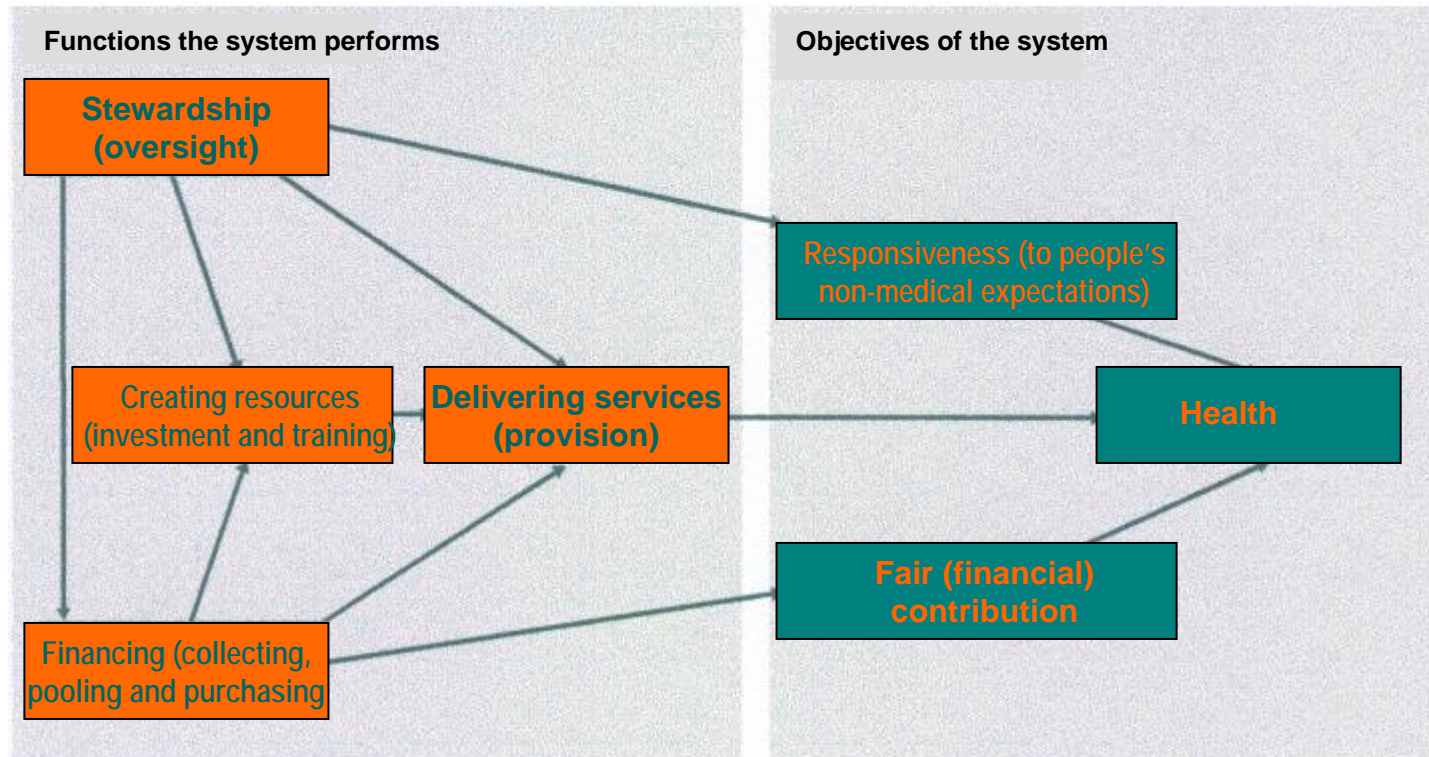
Med-e-Tel 2005

The International Trade Event and Conference for eHealth, Telemedicine and Health ICT
Luxembourg, April 6-8, 2005

Real Time Technology?



Relations between functions and objectives of a health system



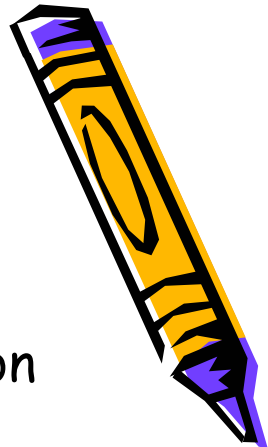


"to die youthful,
healthy, and
as late as possible"



Croatian IT situation in 2002

- Data, but no information
- No integration
- Non-maintainable technology
- Funding focused
- Not responsive to change
- Basic access protection
- No data preservation nor security
- No firewalls or virus protection
- No documentation
- No national framework for data protection in healthcare



Would you drive your automobile without this information?

External System
Function Control

Internal System
Function Control



Resource
Function
Control

Resource
Input/Output
Control

Where We Need to Be?



Have data that is:

- Patient-centered
- Secure
- Accessible
- Accurate
- Consistent

Have infrastructure that is:

- Uniform on county and national level
- Involves all players
- Sustainable
- Flexible



The main Project Objective



To secure long-term stability of the healthcare system and to found it's management on objective, adequate and verifiable data focused on the patient.

Information Management Objectives

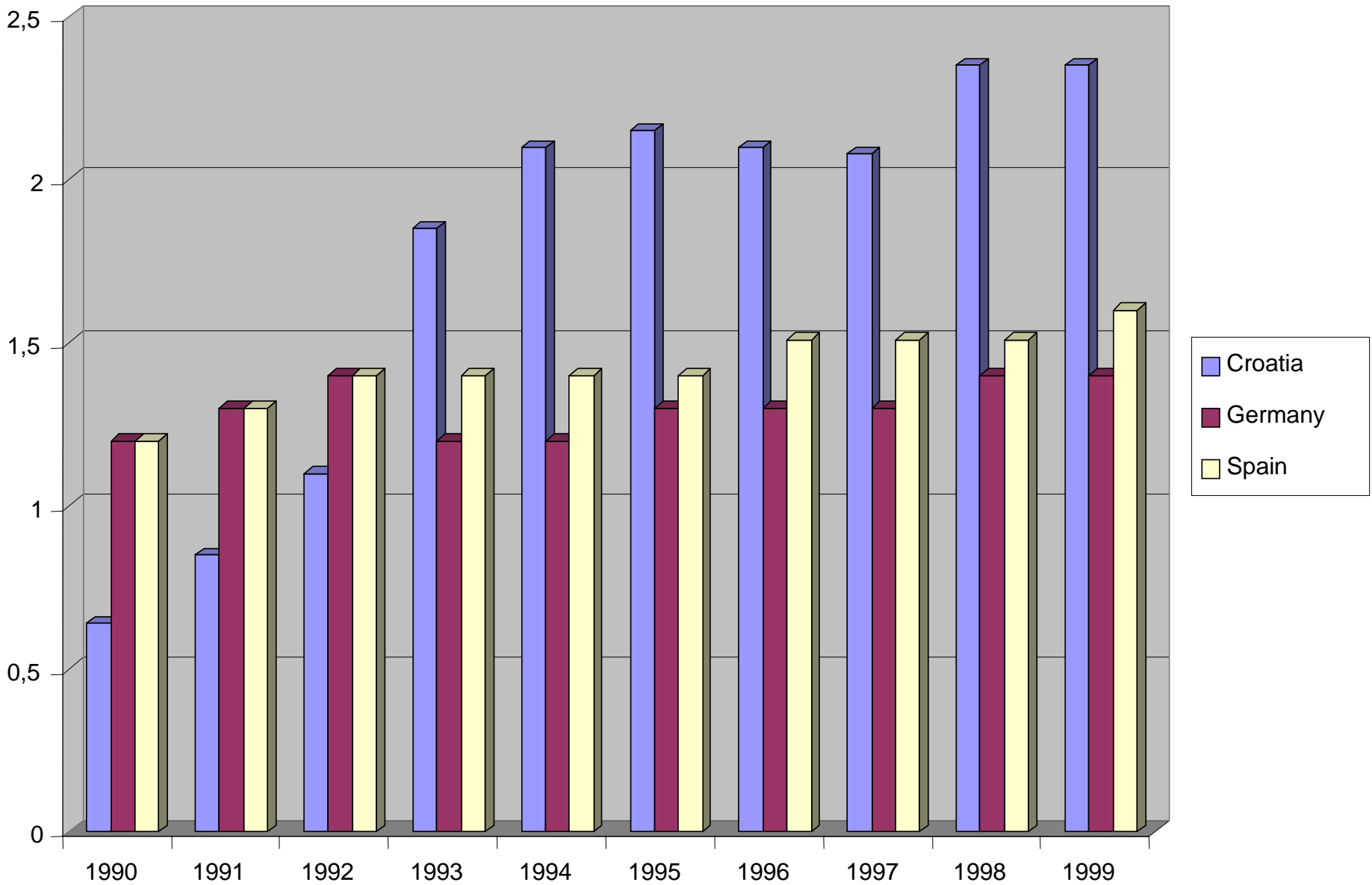
To create a Health Information Management system that will ensure:

- Business intelligence
- Public Health intelligence
- Health Care intelligence
- Equity for citizens (insurees)
- Connectivity between health providers



SPENDING ON DRUGS AS % OF GDP

Croatia, Germany, Spain



Main Objective - Rationalization

Investment in the entire IS/IT system for all health care services:

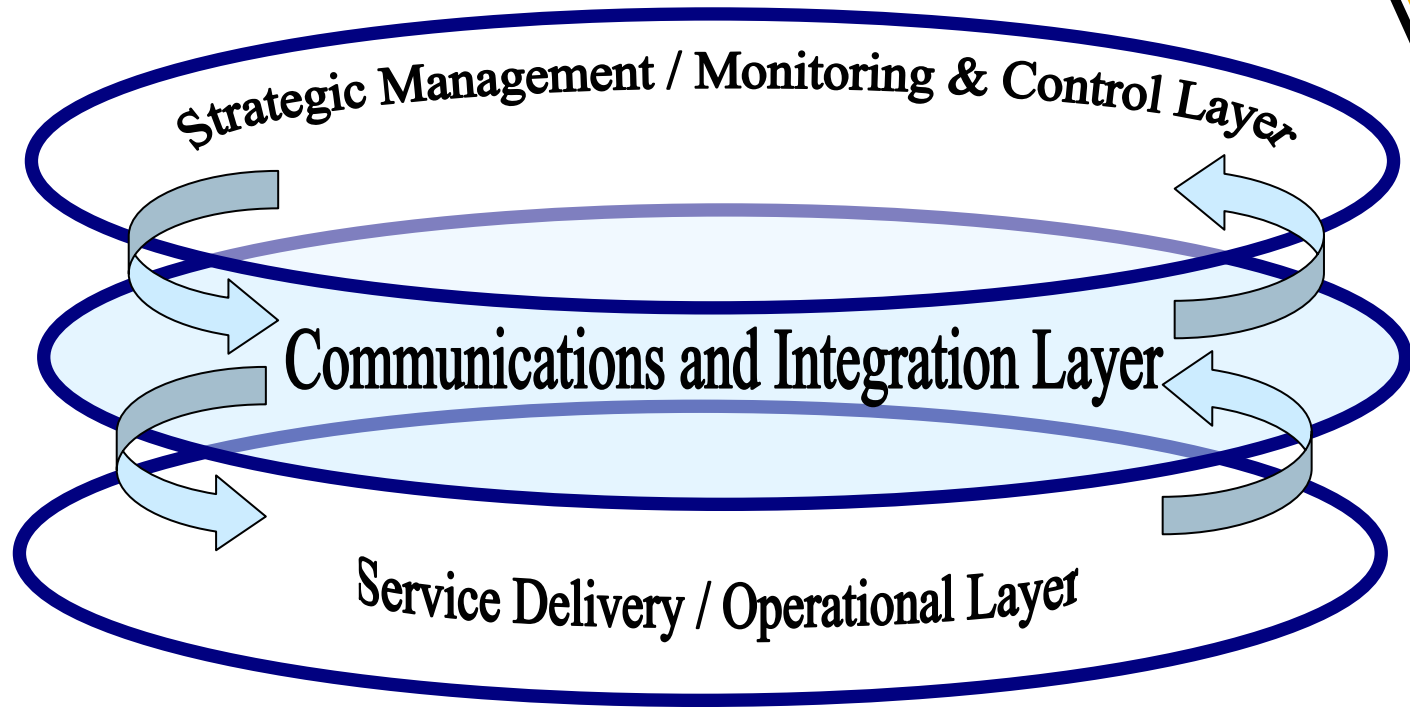
- 1B kunas (150M US\$) in next 10 years (40 US\$ per citizen)
- drugs consumption rationalization of 5% = 15 M US\$/year
- less than present spending per month on health care

Data ▶ Information ▶ Knowledge

resulting from the use of IS/IT will help channel funds properly, fairly and rationally



Strategy of implementation

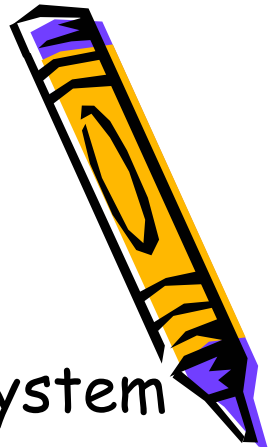


Implementation of ICT the national healthcare system:
one of the primary objectives of key government initiatives!



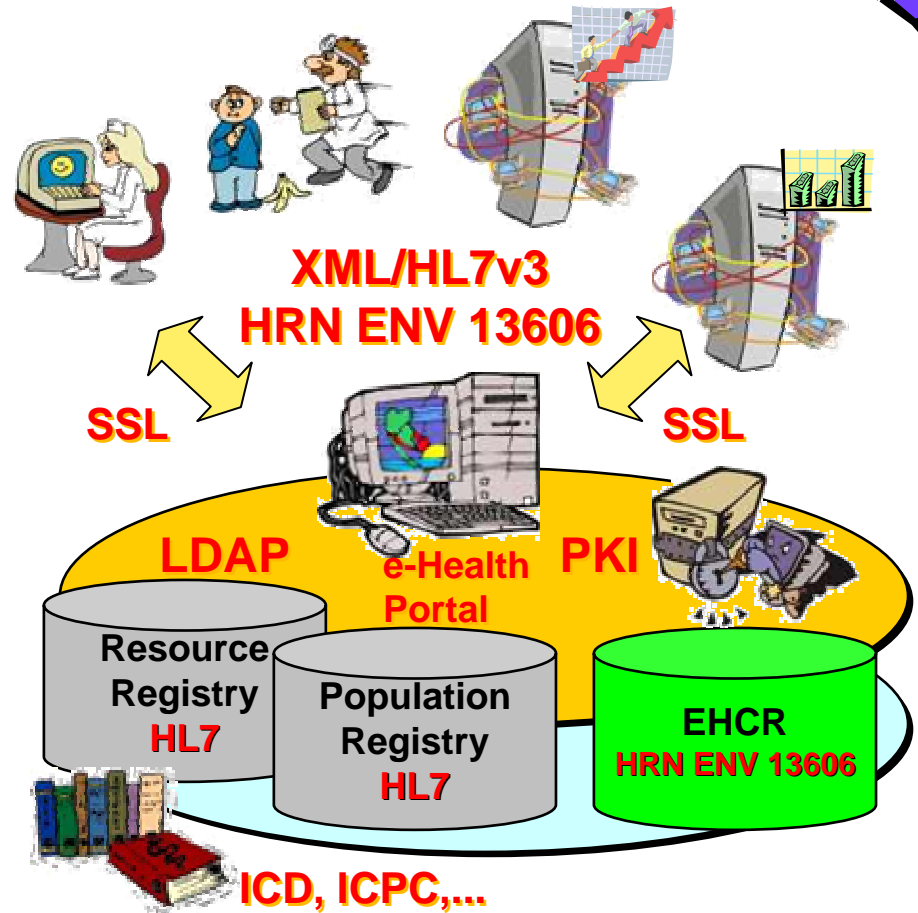
Quality assurance

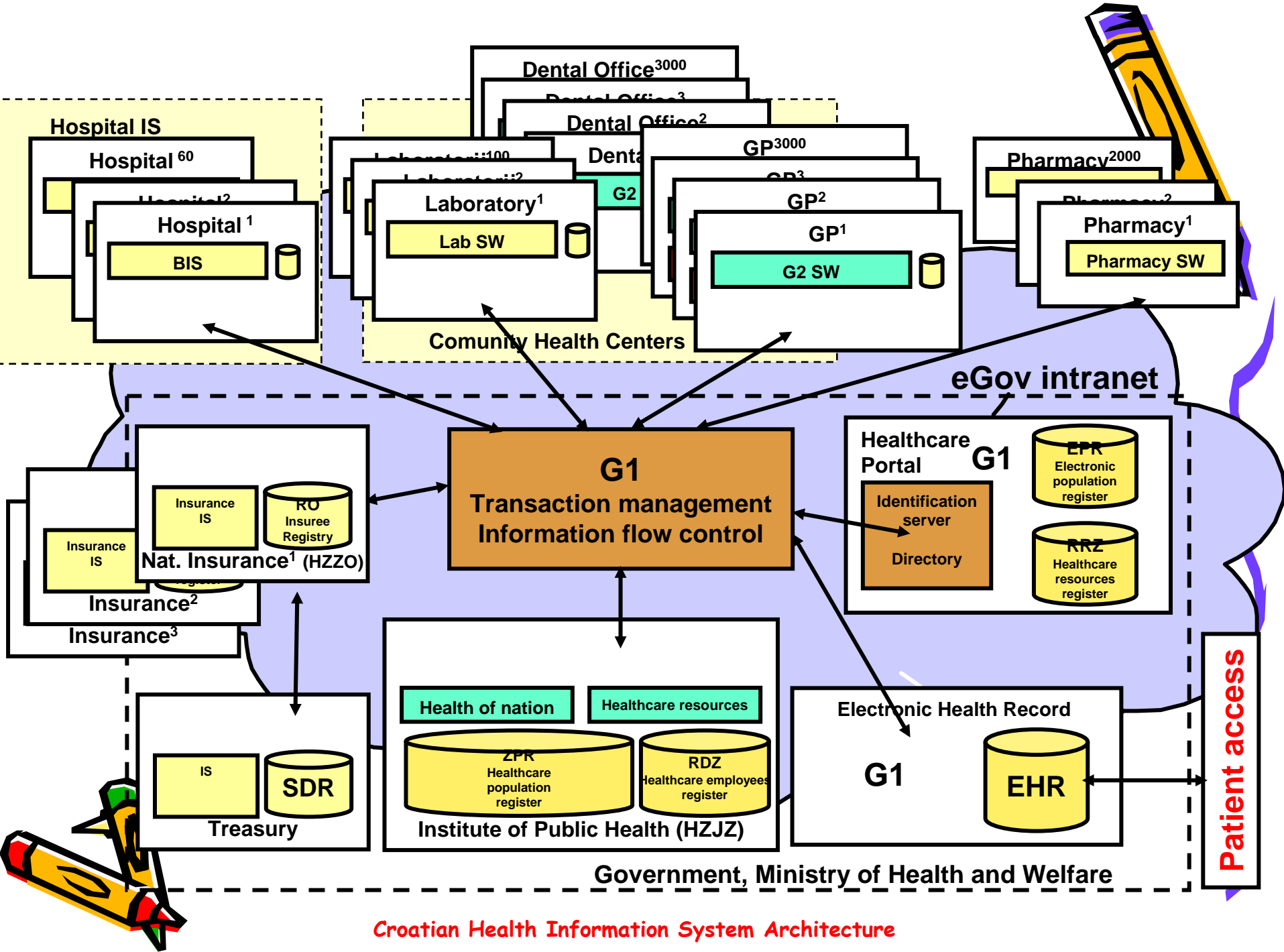
- **Modularity**
 - Simple expansion and maintenance of system components
- **Scalability**
 - Quality assurance and accessibility with anticipation of client base expansion (dentistry, integration of hospital systems, pharmacies, ...)
- **Reliability**
 - Clustering of hardware components
 - Back-up location



Quality assurance (2)

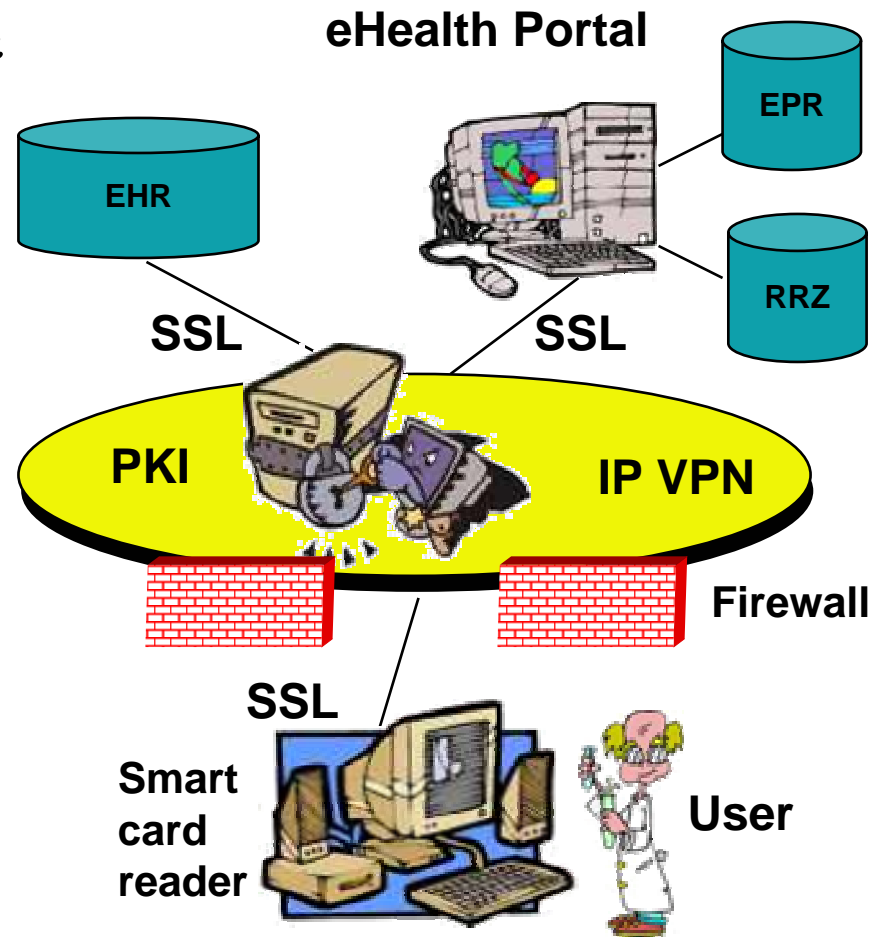
- **Open standards**
 - Communication protocols (Web Services, SSL, LDAP, TCP/IP)
 - Information standards (XML, PKI; HL7v3, HRN ENV 13606)
- **Result:**
 - Complete interoperability regardless of vendor
 - Patient is a citizen of the world!



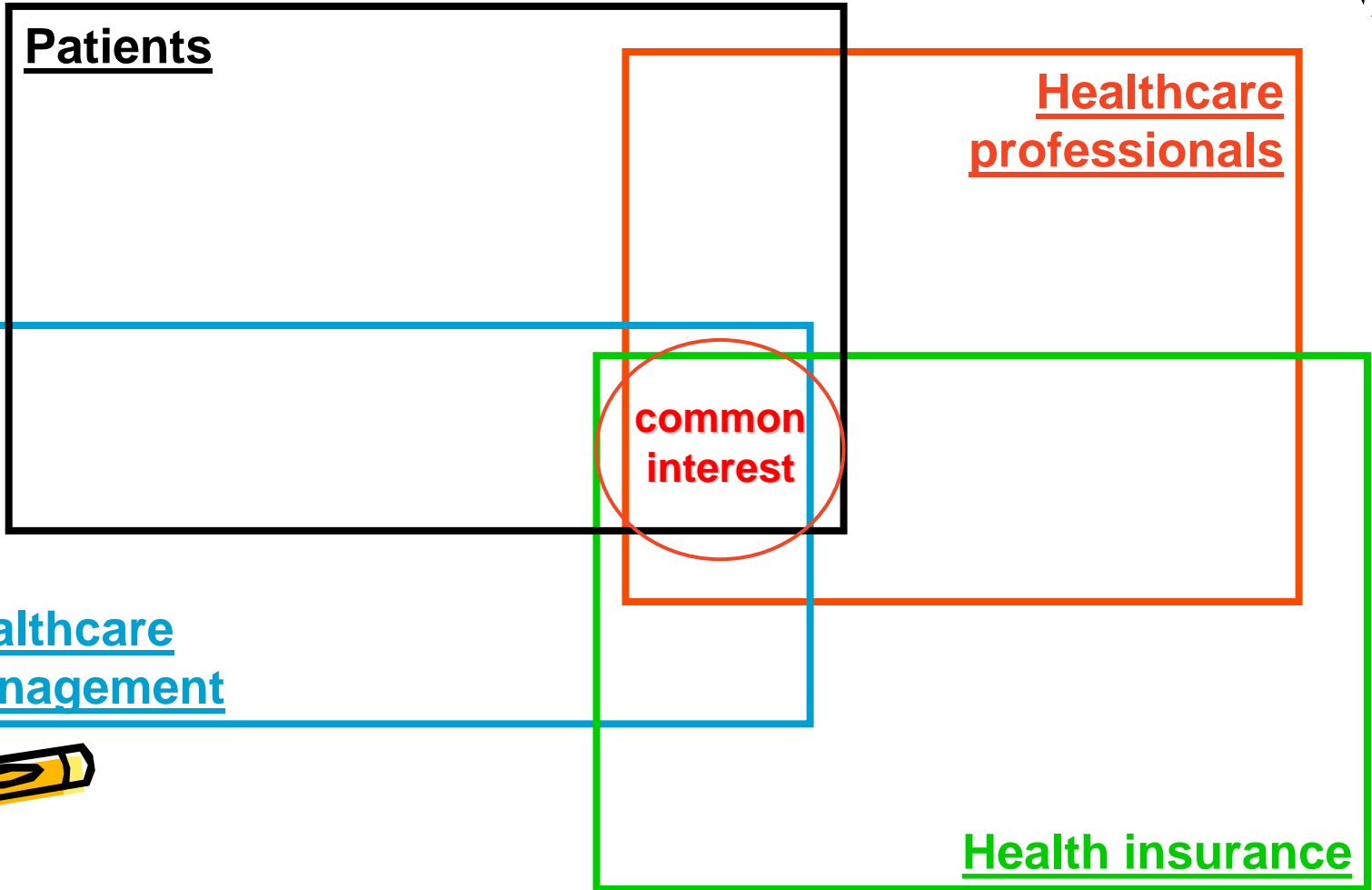
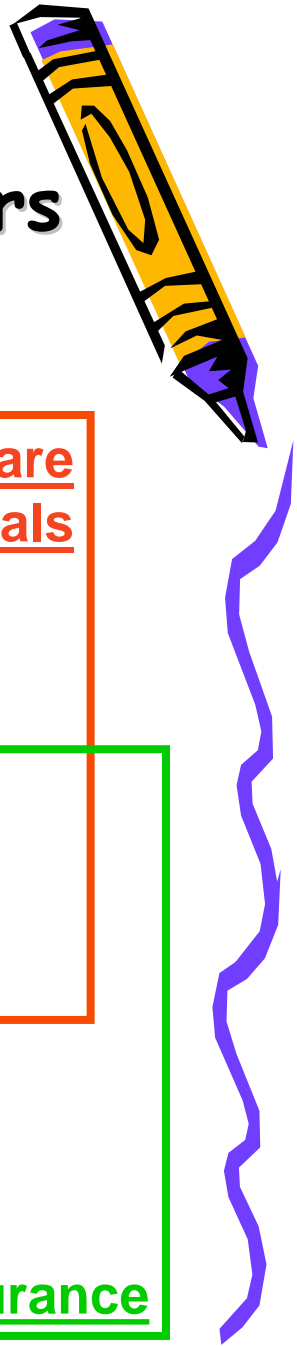


Is IT safe?

- PKI infrastructure and smart card technology (identification, irrefutable data, digital signature)
- Transaction Auditing
- Encryption of communication channels (SSL) and data, VPN and firewall
- Data warehouse architecture
- Secure data storage and disaster recovery
- Virus protection



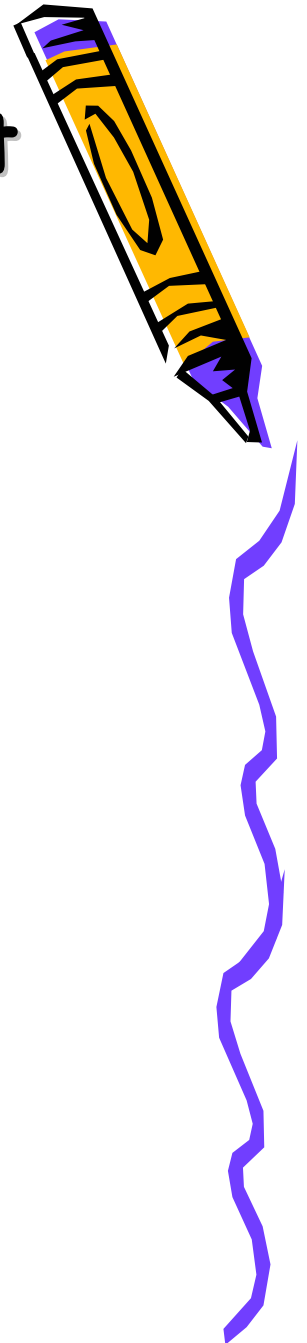
Health Information System Stakeholders



Benefit for healthcare management

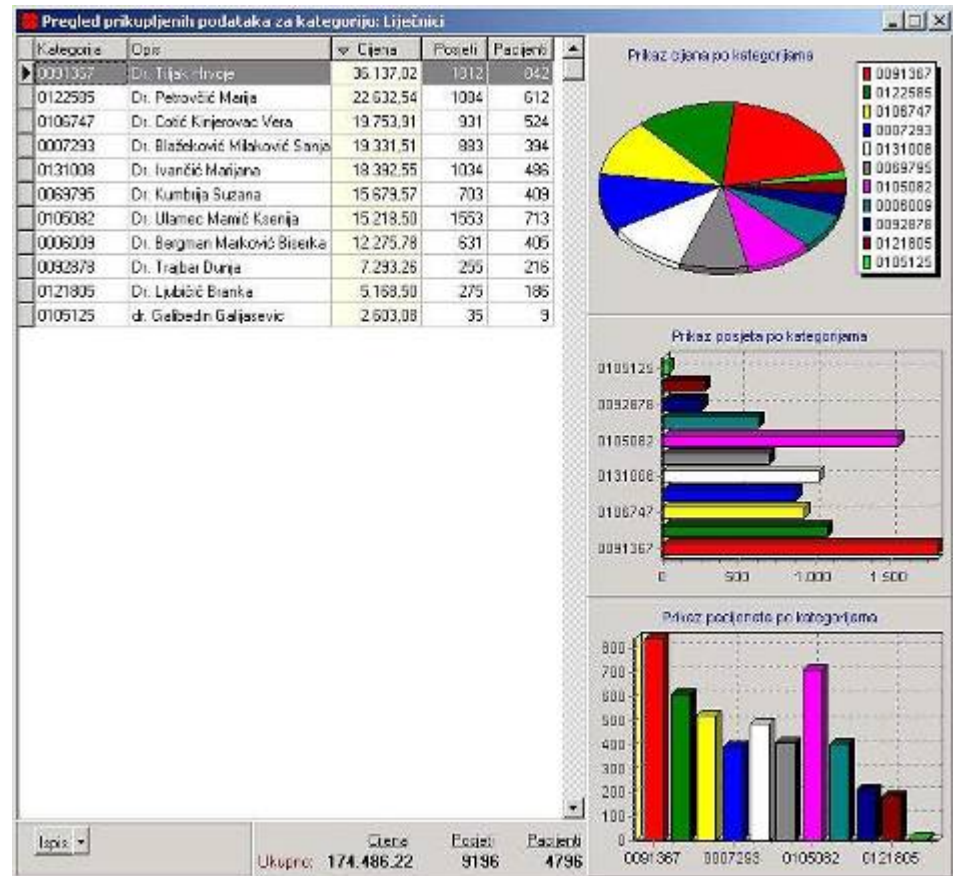
- Human resource management
- Quality and risk management
- Real-time data
- Data standards

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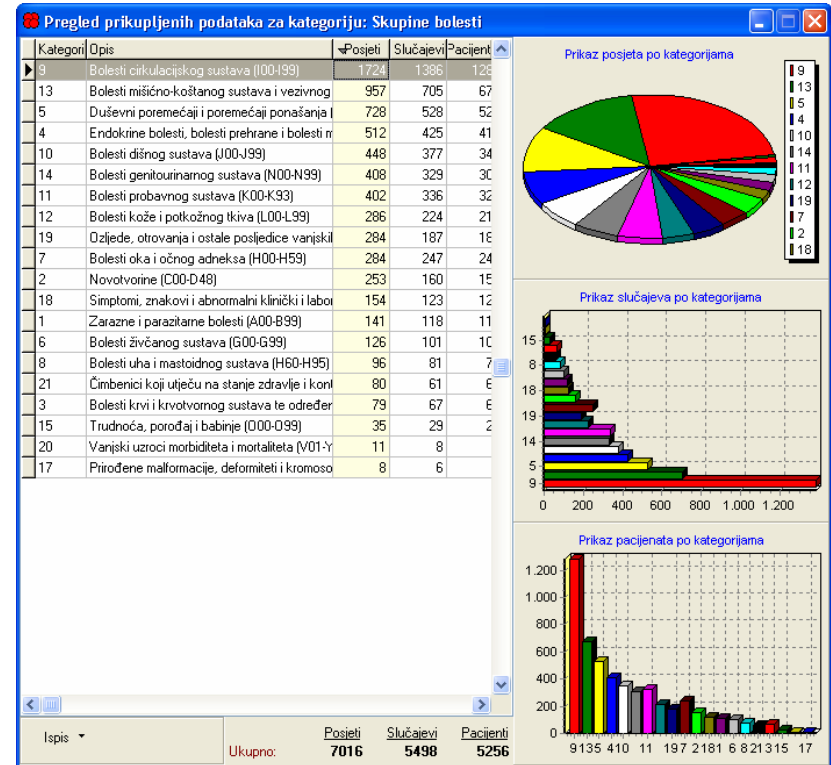
Benefit for health insurance

- Resource management
- Quality control of services rendered and billed



Benefit for healthcare professionals

- Quality of diagnostic and clinical procedures for improved decision making
- Connectability and networking of professionals, medical offices, hospitals and clinics

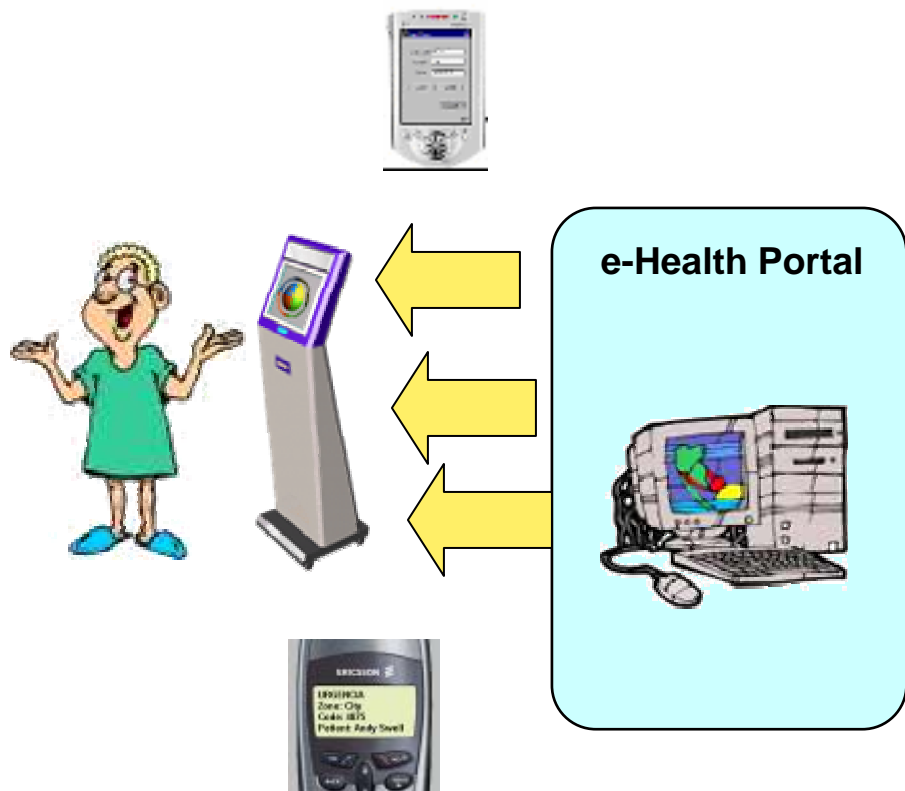


Benefit for patients



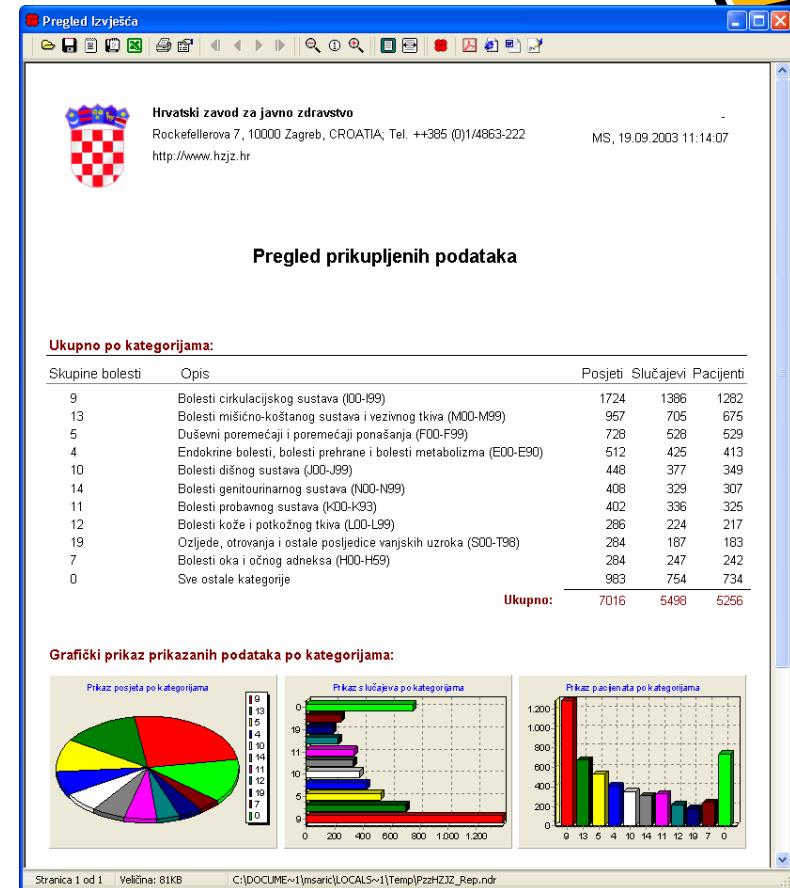
Benefit for patients (2)

- The right to privacy of health information
- Ownership of health record
- Active participation in the health care process



2 month pilot experience: The figures

- 9.515 recorded episodes of care
- 12.386 electronic prescriptions and 4.463 specialist referrals
- Finances:
 - Value of prescribed meds: 1,55 Mkn
 - Value of services rendered: 178,600 kn
- Circulatory problems most common treated disease (I00 - I99) - 25% of all dg and 21.5% of costs



Project timeline



G1

Connection 60 Offices

Blueprint: Specification and final design

Delivery HW and SW

Testing

Implementation start

G2

Delivery of 3000 CD-ROMs

Acceptance of documentation and testing

Implementation in offices

European Union Membership

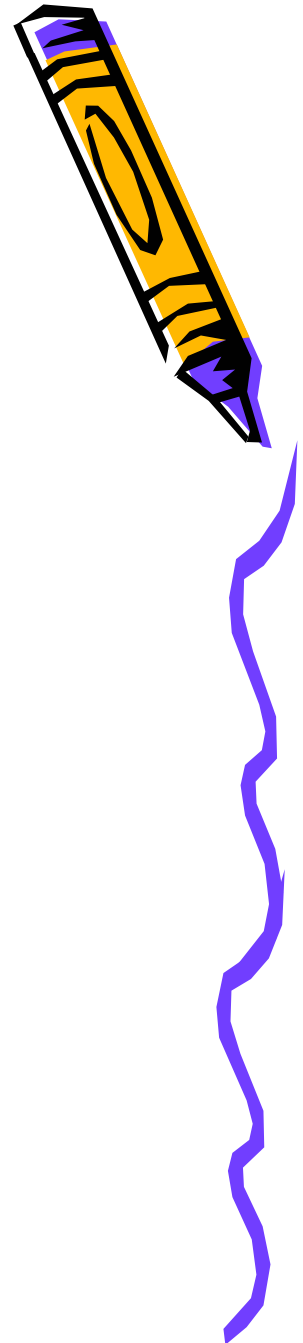
2007



From a vision to reality...



To ensure a happy and healthy future for them



Thank you for your attention!



Any questions?

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